



**US Army Corps  
of Engineers**  
Construction Engineering  
Research Laboratory

**DTIC**  
**SELECT**  
**DEC 2 1991**  
**C**

USACERL ADP Report P-92/02  
October 1991

**AD-A243 661**



## **Work Management System (WORKMAN) User's Manual**

by  
Prameela V. Reddy  
Joan Lee  
Yung-Chiang Chen

This report describes a set of computer programs (WORKMAN) developed to help U.S. Army Directorate of Engineering and Housing (DEH) personnel better manage Service Orders and Work Orders. This system accommodates, but is not limited to, painting, cleaning, inspection, repair, replacement of components, equipment maintenance, and office services. In addition, it provides analytical reports and graphs to support work management, and retains a maintenance history summary of Service Orders and Work Orders. These programs may also be useful at other Government agencies and in the private sector.

Approved for public release; distribution is unlimited.

**91-18861**



91 188 033

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official indorsement or approval of the use of such commercial products. The findings of this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

***DESTROY THIS REPORT WHEN IT IS NO LONGER NEEDED***

***DO NOT RETURN IT TO THE ORIGINATOR***

## Notice to Program Recipients

This program is furnished by the U.S. Government and is accepted and used by the recipient with the express understanding that the Government makes no warranty, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the information and data contained in this program or furnished in connection therewith, and the United States shall be under no liability whatsoever to any person by reason of any use made thereof.

The program belongs to the Government. Therefore, the recipient further agrees not to assert any proprietary rights therein or to represent this program to anyone as other than a Government program. The recipient also agrees that the program and all documents related thereto, including all copies and versions (except when expressly authorized otherwise) in possession thereof, will be discontinued from use or destroyed upon request by the Government.

The program is to be used only in the public interest and/or the advancement of science and will not be used by the recipient to gain unfair advantage over any client or competitor. Whereas the recipient may charge clients for the ordinary costs of applying the program, the recipient agrees not to levy a charge, royalty, or proprietary usage fee (except to cover any normal copying and/or distribution costs) upon any client for the development or use of the received program. Recipients desiring to modify and remarket the program will be required to comply with a separate agreement. Only minor or temporary modifications will be made to the program (e.g., necessary corrections or changes in the format of input or output) without written approval from the Government. Should the program be furnished by the recipient to a third party, the recipient is responsible to that third party for any support and upkeep of the program. Information on the source of the program will be furnished to anyone requesting such information.

The accuracy of this program depends entirely on user-supplied data. It is the user's responsibility to understand how the input data affects the program output and to use the output data only as intended.

All documents and reports conveying information obtained as a result of the use of the program by the recipient will acknowledge the Corps of Engineers, Department of the Army, as the origin of the program. All such documentation will state the name and version of the program used by the recipient.



Accession For	
DTIC GRAH	<input checked="checked" type="checkbox"/>
DTIC Tab	<input type="checkbox"/>
Unpublished	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or
A-1	Special

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave Blank)	2. REPORT DATE October 1991	3. REPORT TYPE AND DATES COVERED Final		
4. TITLE AND SUBTITLE  Work Management System (WORKMAN) User's Manual		5. FUNDING NUMBERS  FEAP-Project SB-KZ1		
6. AUTHOR(S) Prameela V. Reddy, Joan Lee, and Yung-Chiang Chen				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  USACERL PO Box 9005 Champaign, IL 61826-9005		8. PERFORMING ORGANIZATION REPORT NUMBER  USACERL ADP P-92/02		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)  USAEHSC ATTN: CEHSC-FM-M Fort Belvoir, VA 22060		10. SPONSORING/MONITORING AGENCY REPORT NUMBER		
11. SUPPLEMENTARY NOTES  Copies are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.				
12a. DISTRIBUTION/AVAILABILITY STATEMENT  Approved for public release; distribution is unlimited.		12b. DISTRIBUTION CODE		
13. ABSTRACT (Maximum 200 words)  This report describes a set of computer programs (WORKMAN) developed to help U.S. Army Directorate of Engineering and Housing (DEH) personnel better manage Service Orders and Work Orders. This system accommodates, but is not limited to, painting, cleaning, inspection, repair, replacement of components, equipment maintenance, and office services. In addition, it provides analytical reports and graphs to support work management, and retains a maintenance history summary of Service Orders and Work Orders. These programs may also be useful at other Government agencies and in the private sector.				
14. SUBJECT TERMS  work management system (WORKMAN) maintenance		15. NUMBER OF PAGES 50		
		16. PRICE CODE		
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT  SAR	

## FOREWORD

This work was performed for the U.S. Army Engineering and Housing Support Center (USAEHSC) under the Facilities Engineering Application Program (FEAP), Project SB-KZ1, "Automation of Work Management." The technical monitor was Mr. Bruce Brotonov, CEHSC-FM-M.

This project was done by the Facility Systems division (FS) of the U.S. Army Construction Engineering Research Laboratory (USACERL). The USACERL principal investigator was Ms. Prameela Reddy. Dr. Michael J. O'Connor is Chief, USACERL-FS. The USACERL technical editor was Mr. William J. Wolfe, Information Management Office.

COL Everett R. Thomas is Commander and Director of USACERL, and Dr. L.R. Shaffer is Technical Director.

## CONTENTS

	Page
SF 298	1
FOREWORD	2
LIST OF FIGURES AND TABLES	4
<b>1 INTRODUCTION .....</b>	<b>7</b>
1.1 Background	7
1.2 Hardware and Software Requirements	7
1.3 Installation	10
1.4 Mode of Technology Transfer	10
<b>2 GETTING STARTED .....</b>	<b>11</b>
2.1 Key Conventions	11
2.2 Menu Selection	11
2.3 Data Entry	11
2.4 Main Menu	11
2.4.1 Work & Service Order Management	13
2.4.2 File Management	13
<b>3 WORK AND SERVICE ORDER MANAGEMENT .....</b>	<b>14</b>
3.1 Service Order Menu	15
3.1.1 APPEND	15
3.1.2 Field Names and Descriptions	17
3.1.3 UPDATE/INQUIRE	21
3.1.4 STATUS	21
3.2 Service Order Status Entry Screen	22
3.2.1 UPDATE/INQUIRE	22
3.3 Work Request Menu	24
3.3.1 APPEND	25
3.3.2 UPDATE/INQUIRE	29
3.3.3 STATUS	29
3.4 Customer Evaluations/Complaints	31
3.4.1 CUSTOMER EVALUATIONS	32
3.4.2 CUSTOMER COMPLAINTS	32
3.5 Data Tables	34
3.6 ANALYSIS	36
3.6.1 Service Order Analysis	37
3.6.2 Work Requests Analysis	38
3.6.3 Quality Assurance	40
3.6.4 Query	40
<b>4 FILE MANAGEMENT .....</b>	<b>43</b>
4.1 Split SO	43
4.2 Split WR	43
4.3 Merge SO	43
4.4 Merge WR	43
4.5 Reindex	43
4.6 Pack DataBase	44
4.7 New Index	44

## DISTRIBUTION

## FIGURES

Number		Page
1	Overview of WORKMAN With IFS-M	8
2	Overview of WORKMAN as Standalone	9
3	The WORKMAN Title Screen	11
4	WORKMAN Main Menu	12
5	Work and Service Order Management Menu	14
6	Service Order Menu	15
7	Service Order Entry Screen	16
8	Service Order Entry Screen With Help	16
9	Service Order Information Screen	22
10	Service Order Status Information Display	23
11	Service Order Status Entry Screen	23
12	Work Request Menu	25
13	Work Request Entry Screen	26
14	Work Request Status Entry Screen	30
15	Evaluations/Complaints Menu	31
16	Customer Evaluation Form	32
17	Customer Complaint Entry Screen	33
18	Data Table Menu	34
19	Data Tables Maintenance	35
20	Analysis Menu	36
21	Analysis of Service Orders	37
22	Quarterly Service Order Report	38
23	Service Order Report of Top 10 Facilities	39
24	Bar Chart of Service Orders	39

## **FIGURES (Cont'd)**

<b>Number</b>		<b>Page</b>
25	Service Order Query	41
26	Work Requests Status Report	41

## **TABLES**

1	WORKMAN Installation Procedures	10
2	Keyboard Conventions	12



# WORK MANAGEMENT SYSTEM (WORKMAN) USER'S MANUAL

## 1 INTRODUCTION

### 1.1 Background

Many U.S. Army installation Directorates of Engineering and Housing (DEHs) use the Integrated Facilities System (IFS) system to input Service Order (SO) and Work Request (WR) data. However, IFS does not analyze work performance. The U.S. Army Construction Engineering Research Laboratory (USACERL) developed the Work Management System (WORKMAN), a Work Request and Service Order Management system, to help installation DEHs improve management of SO and WR data by assisting in the planning, scheduling, budgeting, assignment, monitoring, and evaluation of maintenance activities. WORKMAN was developed for the personal computer (PC) using FOXPRO,<sup>1</sup> and is compatible with IFS-Micro/Mini (IFS-M).

WORKMAN is a menu- and prompt-driven interactive system that uses database and graphics technologies to provide users with analytical reports and graphs. The overview of the WORKMAN features is shown with IFS-M in Figure 1, and without IFS-M (standalone) in Figure 2.

The Service Order, Work Request, and Real Property validation data can be downloaded from IFS-M into the Work Management System, as shown in Figure 1, to generate analysis reports and graphs. The WORKMAN system can generate customer evaluation forms, using random numbers, and send them out for customers' evaluation. Customer ratings (and complaints) may be entered into the evaluation forms, to be used in generating Quality Assurance Reports. All other data comes from IFS-M. The system also generates weekly, monthly, and quarterly analysis and summary reports and graphs.

Service Order, Work Request, and Real Property data may also be entered into WORKMAN through appropriate input screens as a standalone system. All standalone modules other than input operate similarly to the IFS-M-compatible system. Since WORKMAN's data is compatible with IFS-M, its reports and data are also compatible with other Army systems (e.g., the Facility Engineering Job Estimation [FEJE] and Desktop Resource for Real Property [DR REAL] systems).

### 1.2 Hardware and Software Requirements

WORKMAN minimally requires:

- IBM PC or compatible with 640K random access memory (RAM)
- FOXPRO runtime
- FOXGRAPH
- WORKMAN.

WORKMAN with IFS-M additionally requires:

- WORKMAN and IFS-M Interface (WII) program
- IFS-M and related hardware and software.

---

<sup>1</sup> FOXPRO and FOXGRAPH are products of Fox Software, 134 W. South Boundary, Perryburg, OH 43551.

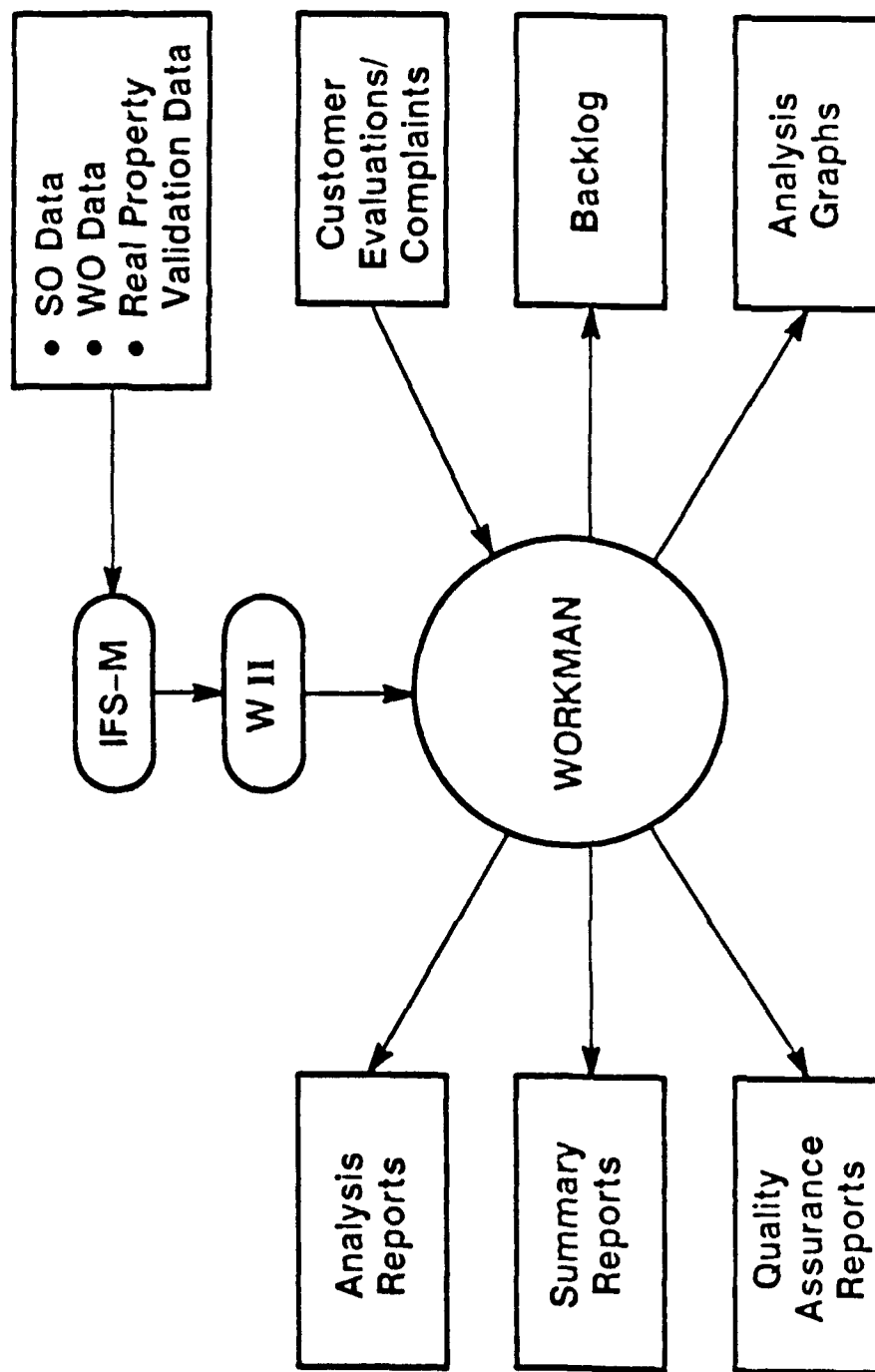


Figure 1. Overview of WORKMAN With IFS-M.

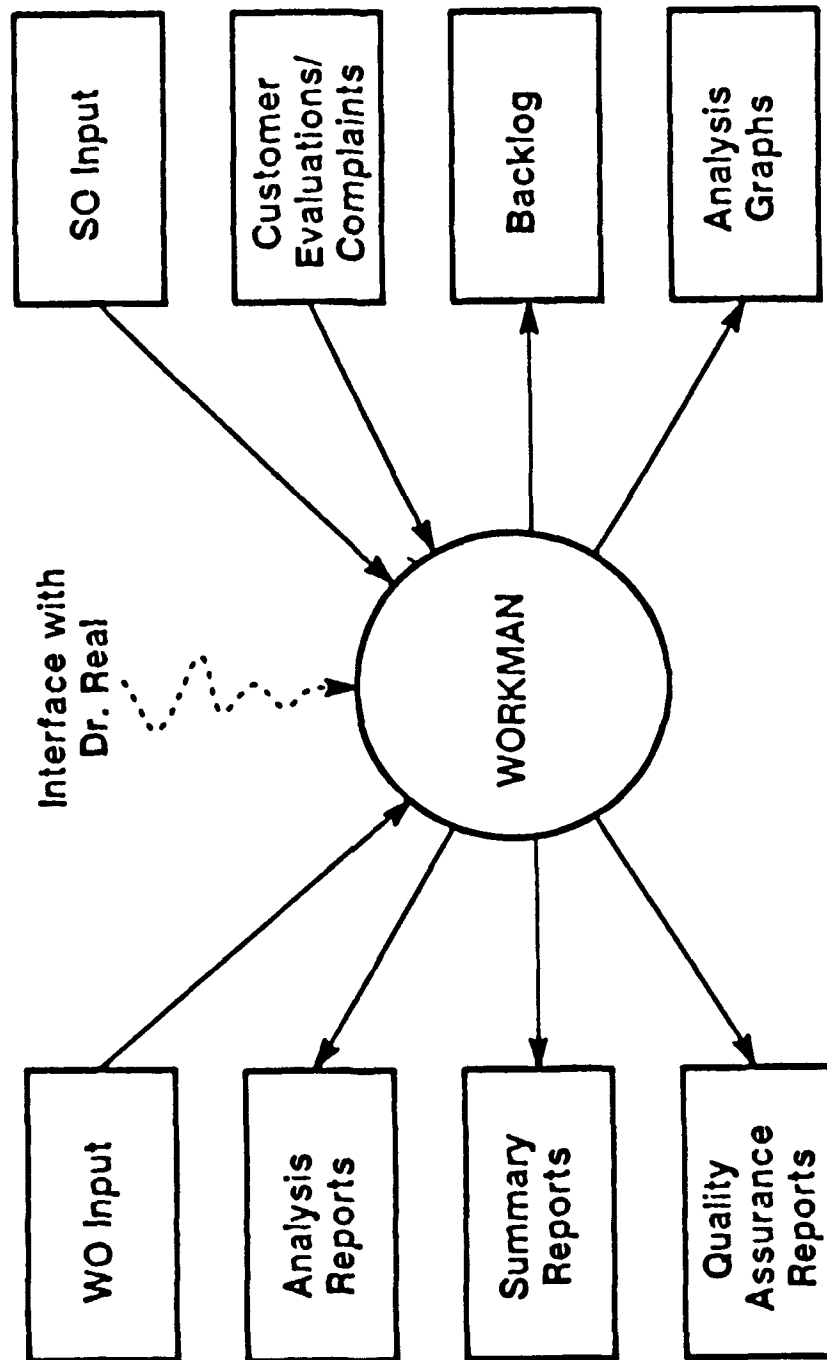


Figure 2. Overview of WORKMAN as Standalone.

To operate properly, WORKMAN requires that the CONFIG.SYS file contain the following settings:

1. files=40
2. buffers=40

### 1.3 Installation

Table 1 lists the installation procedure for WORKMAN and related software.

**Table 1**  
**WORKMAN Installation Procedures**

Task	Action	Keyboard Entry
Create correct subdirectories	Go to C drive	C:
	Insert WORKMAN disk 1 into A drive	
	After directories are created, remove disk 1 from A drive	A:\INSTCRT
Install FOXGRAPH	Go to C:\FOX\GRAPH subdirectory	CD C:\FOX\GRAPH
	Insert FOXGRAPH disk 1	
	Follow the system prompts, then remove FOXDRIVE disk from A drive	A:\INSTALL
Install WORKMAN	Insert WORKMAN program disk 1 into A drive	
	Follow the system prompts, then remove the WORKMAN disk from A drive	A:\INSTWKM

### 1.4 Mode of Technology Transfer

It is anticipated that the Work Maintenance System will be distributed and supported through the U.S. Army Engineering and Housing Support Center (USAEHSC), Fort Belvoir, VA.

## 2 GETTING STARTED

To start the WORKMAN follow the steps below. Type in the text in **bold** and press ENTER.

Change your current disk drive to "C" by typing: "**C:**". At the DOS C: prompt, type **WORKMAN** to start the system, and the WORKMAN title screen (Figure 3) should appear. Press any key to continue to the WORKMAN main menu.

### 2.1 Key Conventions

Table 2 lists the keyboard conventions used in this report.

### 2.2 Menu Selection

Each menu contains a list of choices. To select a particular choice, use the → ← ↑ ↓ arrow keys on the keyboard to highlight the choice and then press ↵ RETURN.

### 2.3 Data Entry

All information is entered through data entry screens. Use the →| TAB key to move from one field to the next. Use |← SHIFT + TAB (press and hold the SHIFT key, and press TAB) to move to a previous field. The bottom line of the input screen is the "command line." This line lists the commands that you can enter during the data entry. A more detailed description is provided in a later section.

### 2.4 Main Menu

The WORKMAN main menu (Figure 4) has two program selections: (1) Work & Service Order Management, and (2) File Management. The End/Exit selection will take you out of the system.

Use the ↑ UP and ↓ DOWN ARROW keys to highlight the appropriate section, and press ↵ ENTER to choose this section. The command line gives a brief description of the highlighted section.

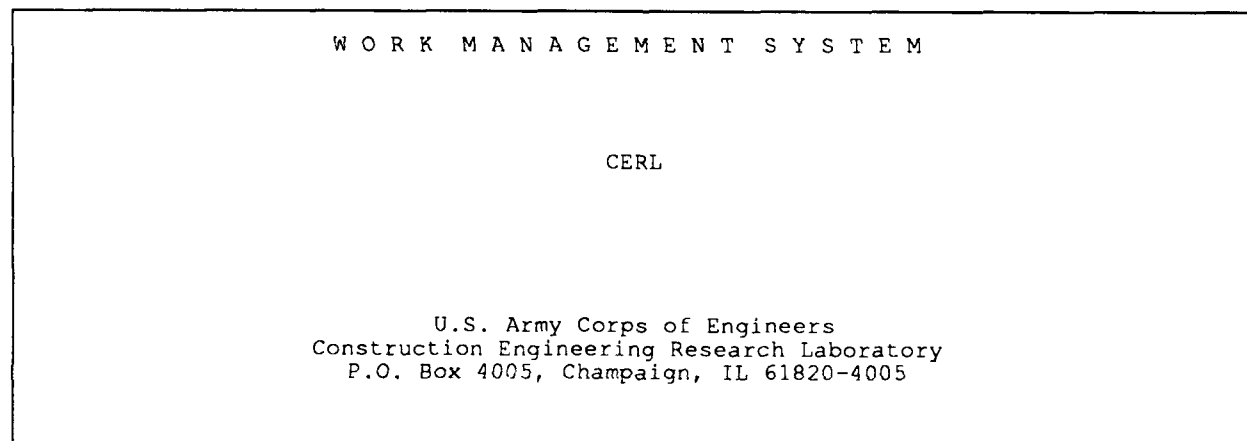
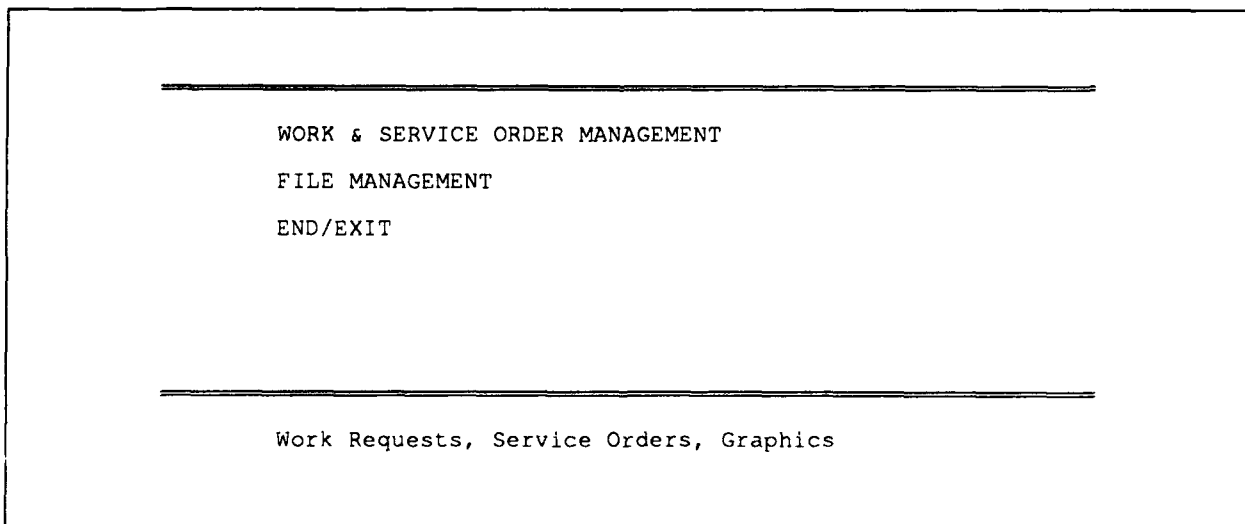


Figure 3. The WORKMAN Title Screen.

**Table 2**  
**Keyboard Conventions**

Symbol	Key	Use
↵	Return or Enter	To enter data
→	Tab	To go to next field
←	Shift-Tab	To go to previous field
→	Left arrow	To highlight menu item
←	Right arrow	To highlight menu item
↑	Up arrow	To highlight menu item
↓	Down arrow	To highlight menu item
	Home key	To go to first record in the database
	End key	To go to the last record in the database
	Page Up	Go to the previous record
	Page Down	Go to next record
	Esc	Go to previous menu



**Figure 4. WORKMAN Main Menu.**

### ***2.4.1 Work & Service Order Management***

This selection lets you enter and edit information related to:

1. Service Orders and Work Requests
2. Customer complaints and evaluations
3. Real property data
4. Status codes
5. Related data tables.

This section is the core of the system. It generates reports, queries, and graphs to help the manager analyze work performance. You can generate a random sample of work performed during a selected period, and automatically generate blank evaluation forms for the customers. After the customers provide their evaluation of the work performed, the system will use the responses to analyze the quality of the work. If the data has already been entered into IFS-M, you may download the data from IFS-M using WII (the WORKMAN/IFS-M Interface program) and use it for analysis.

### ***2.4.2 File Management***

This File Management selection allows you to maintain the Service Order and Work Request Databases through:

1. Split/Merge files
2. Reindex
3. Pack Database
4. New Index
5. End/Exit.

Service Order or Work Request databases may become very large, and at some point, it may be convenient to split them into historical and current databases. Data files can also be merged together. File splitting, re-indexing, and packing operations are performed in the file management section.

### 3 WORK AND SERVICE ORDER MANAGEMENT

To highlight a particular choice in the Work and Service Order Management menu (Figure 5) use the → LEFT ARROW and ← RIGHT ARROW keys. Press ↵ RETURN to select the highlighted item. The command line will show a brief description of the highlighted item. The active keys are displayed above the command line.

The Work and Service Order Management menu contains six choices:

1. SERVICE: Add new service orders, change or view an existing service order, and change or view the status of service orders.
2. WORK: Add new work requests, change or view an existing work request, and change or view the status of work requests.
3. EVAL/COMPL: Enter and edit customer complaints and evaluations.
4. DATA TABLE: Enter and edit codes and real property data.
5. ANALYSIS: Generate analysis reports, queries, and graphs.
6. END: Return to the main menu.

SERVICE WORK EVAL/COMPL DATA TABLE ANALYSIS END

↑ ↓ → ← TO MOVE ↵ TO SELECT <END> RETURN

SERVICE ORDERS

Figure 5. Work and Service Order Management Menu.



### 3.1 Service Order Menu

The selection of SERVICE from Work and Service Order Management menu invokes the Service Order menu (Figure 6), which offers six choices:

1. HELP: Describe each menu choice briefly.
2. APPEND: Enter a NEW service order through a data-entry screen.
3. UPDATE: Edit an EXISTING service order.
4. INQUIRE: View an EXISTING service order. (Does *not* allow you to change service orders.)
5. \*STATUS\*: To view or edit the STATUS of a service order. (When you enter a new Service Order, the status automatically becomes SHP [shop].) Status codes are compatible with IFS-M.
6. END: Return to the Work and Service Order Management menu.

The Service order menu provides a brief on-line HELP option for each menu choice. For instance, APPEND allows you to enter a new service order through a data entry screen. You may press the F1 key while entering data to get help for a particular field.

#### 3.1.1 APPEND

When you select APPEND from the Service Order Menu, a Service Order Entry Screen (Figure 7) will appear to add a new Service Order. (The fields and descriptions are same as in IFS-M.)

To get help for a particular field, press the F1 key. The help file will provide a dialog box and a brief description of the field containing a list of valid entries to choose from (Figure 8). To select an entry from the dialog box, use the ↑ UP ARROW or ↓ DOWN ARROW key to select the appropriate entry, and press ↵ ENTER.

SERVICE	ORDERS	=>	HELP	APPEND	UPDATE	INQUIRE	*STATUS*	END
EXPLAIN how this screen works. Press ↵ Enter ...								

Figure 6. Service Order Menu.

```

SERVICE ORDERS =>  HELP      APPEND    UPDATE    INQUIRE  *STATUS* END
                                           04/04/91
INSTALLATION:USA CERL                      WORK DESCRIPTION:      RECEPTIONIST:MARY

POC NAME:          POC PHONE:          WORK LOCATION:          RPF INSTALL:
- - -              - - -              - - -              USA CERL

--- DOCUMENT NUMBER ---
CUST ID  SER NO  FY  TYPE  WKCL FAC  EQUIP  RPF  FH  RPF
Q0001    1      1      CD: NO: Y/N  EQUIP ID: QTRS NO: PARTITION:

SHOP SO  REIMB  HOUSING  COMP  PROG IND  SPEC INT
CD: PRI: CUST ID:  CD:  CD: TDAC: APC: OTHER FUND: CD:  CD:

TASK  TASK
UNIT: CD:  TASK DESCRIPTION:  CONTRACT NO:  WORK STATUS
0      CD:  SHP

Remark:

<F1>: HELP      <CTRL W>  TO FINISH

```

Figure 7. Service Order Entry Screen.

```

SERVICE ORDERS =>  HELP      APPEND    UPDATE    INQUIRE  *STATUS* END
                                           02/20/91
INSTALLATION:FSH                      RIPTION:      RECEPTIONIST:BMAHLER

FACILITY NUMBER(conditional) is
an unique 5 character alphanumeric
value assigned to a real property
facility within an installation.

WORK LOCATION:          RPF INSTALL:
                          FSH

--- DOCUMENT NUMBER ---
C 00001  SER NO  FY  TYPE  WKCL FAC  EQUIP  RPF  FH  RPF
00002  Q0001  1      CD: NO: Y/N  EQUIP ID: QTRS NO: PARTITION:
00003

SHO 00004  REIMB  HOUSING  COMP  PROG IND  SPEC INT
CD: 00005  CUST ID:  CD:  CD: TDAC: APC: OTHER FUND: CD:  CD:
00006
00007

TAS 00008  SK
UNI 00009  :  TASK DESCRIPTION:  CONTRACT NO:  WORK STATUS
0 00010  CD:
00011  SHP

Rem <F1> HELP      <CTRL W>  TO FINISH

```

Figure 8. Service Order Entry Screen With Help.

Figure 8 shows help dialog boxes corresponding with the "Facility Number" fields. From this point, you may use the ↑ UP and ↓ DOWN arrows to select the correct number and press ↵ ENTER. WORKMAN searches the database for its "WORK LOCATION" and displays this on the screen.

**3.1.1.1 Saving the Information.** To save this service order, first press **Ctrl-W** (Hold CTRL key down while pressing W) to tell WORKMAN that you are finished entering information, then press ↵ ENTER.

**3.1.1.2 Exiting APPEND.** Press the ESC key to EXIT Append. Note that, if you press ESC before saving the information, you will exit Append *without* saving new or changed entries.

### **3.1.2 Field Names and Descriptions**

Enter the appropriate data in each field as defined below. Some of the data described here need to be defined in the data tables using DATA TABLE in the Work and Service Order Management Menu before adding Service Orders.

INSTALLATION contains locally assigned Installation abbreviation. On the first Service Order that you enter, type the Installation's abbreviation. This value will be extracted and displayed by the system for all subsequent Service Orders that you enter. You may change the value by overtyping the displayed value and pressing ↵ RETURN.

RECEPTIONIST contains an abbreviation for the receptionist's name. This identifies the person who created the Service Order. On the first Service Order that you enter, type the receptionist's abbreviated name. This name will be extracted and displayed by the system for all subsequent Service Orders that you enter. You may change the value by overtyping the displayed value and pressing ↵ RETURN.

WORK DESCRIPTION contains an explanation of the work to be performed, e.g., "Fix the door knob so it can be locked properly." Enter the short description and press ↵ RETURN.

POC NAME identifies the person responsible for the work information about the work request. Enter the name of the responsible person and press ↵ RETURN.

POC PHONE contains a phone number to contact the person responsible for specific work.

WORK LOCATION contains the location (address) of the work to be performed. This is automatically filled in by the system after searching through the facility database to get the address of the facility that matches the facility number entered into the system.

RPF INSTALL contains a locally assigned abbreviation for the name of the installation requesting the work. This field is displayed by the system, but you may change the value by overtyping it and pressing ↵ RETURN.

DOCUMENT NUMBER consists of CUST ID, SER NO, FY, and TYPE. Each Service Order has a unique DOCUMENT NUMBER (combination of CUST ID, SER NO, FY, and TYPE), which is the key to identify and access a Service Order.

CUST ID identifies the user from a facility submitting a request for work. If the customer has previously been identified on the database as a routinely reimbursable customer, the system will extract and display the CUST ID in REIMB CUST ID.

SER NO contains a serial number assigned by the system. You may either accept the displayed value by pressing **↵** RETURN, or change the displayed value by overtyping it and then pressing **↵** RETURN.

FY is the Fiscal Year and TYPE is the document type.

WKCLCD contains one of the following WorkClass Codes identifying the work program:

- J - Operations of utilities
- K - Maintenance and repair
- L - Minor construction and alterations
- M - Other engineering support/in-place equipment.

FACNO contains a unique facility number assigned to a facility within an installation for facility identification.

EQUIP Y/N contains an equipment indicator code (Y or N) that indicates whether the Service Order will require work on equipment. Y indicates that a Service Order *will* require work on equipment.

RPF EQUIP ID contains the abbreviation for RPF Equipment Identification. If you type Y for EQUIP Y/N, the cursor will move to RPF EQUIP ID. Enter the Equipment ID and press **↵** RETURN. If you type N for EQUIP Y/N, the system will automatically assign the DESIGN USE CATEGORY CODE associated with the facility. If there is more than one DESIGN USE CATEGORY CODE associated with the facility, the system will display the list of codes in a window. Highlight the appropriate category code and press **↵** RETURN.

FH QTRS NO contains the abbreviation for Family Housing Quarters Number. If applicable, enter the number and press **↵** RETURN. If applicable, enter partition number in RPF PARTITION and press **↵** RETURN. If not, just press **↵** RETURN. Pressing F1 will display all valid entries for any field.

SHOP CD contains a locally defined code to identify an operational unit or craft shop. For contract shops in the commercial activities environment, the system will extract and display a corresponding CONTRACT NUMBER associated with the SHOP CD.

SO PRI contains the field name for Service Order Priority Code representing the degree of urgency associated with a Service Order:

- 1 - Emergency
- 2 - Urgent
- 3 - Routine.

Some other values may be locally defined by the installation DEH.

REIMB CUST ID identifies a user who reimburses the DEH for specific services. If the customer has been previously recorded on the database as a routinely reimbursable customer, the system will automatically extract and display the REIMB CUST ID from the CUST ID field.

HOUSING CD is the same as Housing Class Code in IFS-M. This code is used to group like types of housing facilities. The Housing Class Codes are defined in the database using DATA TABLE from the Work and Service Order Management Menu.

COMP CD is the abbreviation for Component Code. The COMP CD values are:

- 01 - Exterior painting
- 02 - Interior painting
- 03 - Flat roof
- 04 - Sloped roof
- 05 - Siding
- 06 - Mechanical
- 07 - Electrical systems
- 08 - Plumbing systems
- 09 - Other.

Other codes may be defined locally.

TDAC contains the Technical Data Activity Code relating category codes and real property maintenance activity to the Army Management Structure (AMS) code.

APC contains the Account Processing Code used in STANFINS to identify the AMS code, fund source, local financial management information needs, and other financial data associated with an item of cost.

OTHER FUND contains the Other Fund Citation value that identifies the expenditure order and work order functional code used in costing work. If APC is not blank, then OTHER FUND is not allowed.

PROG IND CD contains a code to identify special command programs or items of interest. The Department of the Army-directed codes and their descriptions are:

- A - Hazardous waste
- B - BMAR
- C - Corrosion control
- D - DMAR
- E - Energy
- F - Fire
- G - Family housing
- H - Health
- I - Environment
- N - NAF (nonappropriated funds)
- O - OSHA
- P - Pollution abatement
- Q - Quality of life
- R - Recreational activities
- S - Safety (Surgeon General)
- T - Security
- U - Historical preservation
- V - Command interest
- W - Morale/welfare/comfort
- X - Engineer other
- Y - Mission performance/readiness
- Z - Troop projects

- 1 - Archaeology
- 2 - Commercial forest
- 6 - Occupant attributable
- 7 - Occupant nonattributable.

Other codes may be defined locally by the DEH.

SPEC INT CD contains a locally assigned code to identify work requirements of special interest to the Directorate of Engineering and Housing (DEH) organization or higher headquarters.

TASK UNIT identifies the number of times that a given task will be accomplished. If you enter a TASK UNIT, you must also enter a TASK CODE, which is a locally assigned code to identify the Service Order task to be completed. TASK DESCRIPTION will be extracted from the database and displayed on the screen.

WORK STATUS CD represents the status of the work. SHP will be automatically displayed on the Service Order Entry screen. You may either accept the entry by pressing ↵ RETURN or change the entry by overtyping the original value and then pressing ↵ RETURN. WORK STATUS CDs are:

- APV - Approved
- BO - Bids Opened
- CA - Contract Awarded
- CAN - Canceled
- CDE - Completed Detailed Estimating
- CMP - Completed
- CR - Customer Remark
- CUE - Completed Unit Price Estimating
- DEF - Deferred
- DIS - Disapproved
- HLD - Held for further action
- REO - Reopened
- SUS - Suspended for further information
- AA - Approval Authority
- ADE - Assigned Detailed Estimating
- AUE - Assigned Unit Price Estimating
- BGD - Building and Grounds Division
- BUD - Budget and Accounting
- CRB - Construction Review Board
- CS - Customer Service
- DE - District Engineer
- DEH - Director, Engineering and Housing
- DEP - Deputy DEH
- DOC - Director of Contracting
- EDB - Engineering Design Branch
- ENV - Environmental Engineering
- EPS - Engineering Plans and Services Division
- ERM - Engineering Resources Management Division
- FD - Fire Department
- FHM - Family Housing Management Office
- HSG - Housing Division
- IC - Installation Commander
- MC - Material Coordinator
- OPS - Operations Division

- SAF – Safety Office
- SCH – Scheduler
- SEC – Security Office
- SHP – Shop
- SUP – Supply Division
- TDE – To Detailed Estimating
- TR – Technical Review
- TUE – To Unit Price Estimating
- UD – Utilities Division.

Other WORK STATUS CDs may be locally defined.

REMARK contains a statement providing additional work information. If necessary, enter a REMARK about the job to be performed and press ↵ RETURN.

### 3.1.3 UPDATE/INQUIRE

Select UPDATE from Service Order Menu to change any existing Service Order information. Select INQUIRE to view an existing Service Order. INQUIRE lets you see but does *not* let you make any changes to the Service Order. UPDATE allows you to edit an existing Service Order. The remainder of the processes described below are the same for UPDATE and INQUIRE. For both UPDATE and INQUIRE, the Service Order Information Screen will appear with no information in the fields (Figure 9). The command line will display ↵ INDEX ACCESS, <Home> 1st RECORD, and <ESC> TO EXIT. To exit the operation press ESC.

There are two methods for selecting the Service Order:

1. Type in the document number by pressing ↵ INDEX ACCESS
2. Search through all Service Orders by pressing HOME.

3.1.3.1 Finding a Service Order based on document number. To search for a Service Order based on the document number, press ↵ ENTER for INDEXED ACCESS as indicated on the command line. To find the Service Order, type in the document number. WORKMAN then searches for that document number. If it cannot be found, WORKMAN will display "document number not found" in the command line. If WORKMAN finds the Service Order, the Service Order Information will be displayed.

3.1.3.2 Searching Through Service Orders. Press the HOME key to see the first Service Order. Press the PgDn key to see the next Service Order, and the PgUp key to see the previous Service Order.

When the Service Order Information is displayed for INQUIRE operation, the command line shows three options: <PgUp> PREVIOUS RECORD, <PgDn> NEXT RECORD, and <ESC> EXIT. Press the ESC key to return to the previous menu.

When the Service Order Information is displayed for UPDATE operation, the command line shows five options: ↵ TO EDIT, <Del> TO DELETE, <PgUp> PREV, <PgDn> NEXT, and <ESC> EXIT. To edit a particular Service Order press ↵ RETURN. The cursor will move to the Service Order fields. Press the DEL key to delete the Service Order. The other three options are same as in INQUIRE operation.

### 3.1.4 STATUS

Select \*STATUS\* to work with Service Order Status. Status Codes give the STATUS of the work. When a new Service Order is entered, the STATUS automatically becomes SHP (shop). The

SERVICE ORDERS =>		HELP	APPEND	UPDATE	INQUIRE	*STATUS*	END
INSTALLATION:					04/05/91		
		WORK DESCRIPTION:			RECEPTIONIST:		
POC NAME:		POC PHONE:		WORK LOCATION:		RPF INSTALL:	
<div style="border: 1px solid black; padding: 5px;">           --- DOCUMENT NUMBER ---            CUST ID SER NO FY TYPE         </div>		WKCL FAC		EQUIP		RPF	
		CD: NO:		Y/N		EQUIP ID: QTRS NO: PARTITION:	
SHOP SO		REIMB		HOUSING		COMP	
CD: PRI:		CUST ID:		CD:		CD: TDAC: APC: OTHER FUND: CD: PROG IND SPEC INT	
TASK		TASK		TASK DESCRIPTION:		CONTRACT NO: WORK STATUS	
UNIT: CD:						CD:	
Remark:							
J INDEX ACCESS      <Home> 1st RECORD      <ESC> TO EXIT							

**Figure 9. Service Order Information Screen.**

STATUS Code needs to be changed as the status of the work changes. \*STATUS\* provides three capabilities: APPEND, UPDATE, INQUIRE. END returns you to the previous menu.

**3.1.4.1 APPEND.** When a Service Order is created, a status record is also created with status SHP (shop) for that Service Order. When the status is changed, another Service Order status record is created. Press F1 (Help) in the Work Status Code field to see a list of valid Work Status Codes (Figure 10). Using the ↑ UP and ↓ DOWN arrows, scroll through the list, and press J ENTER to select the desired code.

When APPEND is selected from STATUS menu, the Service Order Status Information will be displayed on the screen with no information in the fields, as shown in Figure 10. The cursor will be at the Document Number. Enter the Document Number of the Service Order, and the Service Order Status Entry screen will appear (Figure 11).

## 3.2 Service Order Status Entry Screen

All the fields are filled in with appropriate information in the Service Order Status Entry screen. Enter new status information for that service order. If the status is CMP (completed), the system will prompt for the labor hours. Enter the actual time spent on the job, exit the screen, and save the information using the commands displayed on the screen.

### 3.2.1 UPDATE/INQUIRE

Select UPDATE from Service Order Status Menu to change Service Order Status information. Select INQUIRE to view current status of the Service Order without making changes. WORKMAN will



```

SERVICE STATUS =>  APPEND  UPDATE  INQUIRE  END  04/08/91

INSTALLATION:                                RECEPTIONIST:

--- DOCUMENT NUMBER ---
CUST ID SER NO FY TYPE
001      Q0009  0  R

SHORT WORK DESCRIPTION

WORK STATUS
DATE M/D/Y  TIME 24H:M  CODE  STATUS DESCRIPTION  STATUS COMMENT
/  /

<F1>: HELP      <CTRL W>  TO FINISH

```

**Figure 10. Service Order Status Information Display.**

```

SERVICE STATUS =>  APPEND  UPDATE  INQUIRE  END  04/05/91

INSTALLATION: USA CERL                        RECEPTIONIST: MARY

--- DOCUMENT NUMBER ---
CUST ID SER NO FY TYPE
001      Q0009  0  R

SHORT WORK DESCRIPTION
this is a test

WORK STATUS
DATE M/D/Y  TIME 24H:M  CODE  STATUS DESCRIPTION  STATUS COMMENT
09/10/90    08:19    SHP    SHOP
11/03/90    08:00    CMP    COMPLETED

<PgUp>  PREVIOUS RECORD  <PgDn>  NEXT RECORD  <ESC>  EXIT

```

**Figure 11. Service Order Status Entry Screen.**

also display all the status codes with the appropriate dates for that Service Order. If you select UPDATE, you may change the Service Order Status record. There are several status records for each Service Order, and UPDATE allows you to edit one status record at a time for a Service Order. The remainder of the processes described below are the same for UPDATE and INQUIRE.

The Service Order Status Information Screen will be displayed with no information in the fields. Select the Service Order. There are two methods for selecting the Service Order:

1. Enter the document number
2. Search through the Service Order status database.

3.2.1.1 Finding a Service Order Based on Document Number. To search for a Service Order based on the document number, press  $\downarrow$  ENTER for INDEXED ACCESS as shown on the command line. To find the Service Order, enter the document number. WORKMAN searches for that document number. If it cannot be found, WORKMAN will display "document number not found" on the command line. If WORKMAN finds the Service Order, it displays the Service Order Status Information.

3.2.1.2 Searching Through Service Order Status Database. Press the HOME key to see the first Service Order. Press the PgDn key to see the next Service Order Status record, and the PgUp key to see the previous Service Order Status record.

When the Service Order Status Information is displayed for the INQUIRE operation, the command line shows three options: <PgUp> PREVIOUS RECORD, <PgDn> NEXT RECORD, and <ESC> EXIT. Press the ESC key to return to the Service Order menu.

When the Service Order Status Information is displayed for UPDATE operation, the command line shows five options:  $\downarrow$  TO EDIT, <Del> TO DELETE, <PgUp> PREV, <PgDn> NEXT, and <ESC> EXIT. To edit a particular Service Order press  $\downarrow$  RETURN. The cursor will move to the Service Order Status fields. Press the DEL key to delete the Service Order status record. The other three options are same as in INQUIRE operation.

### 3.3 Work Request Menu

The selection of WORK from Work and Service Order Management menu will take you to the Work Request menu (Figure 12), which provides features similar to the Service Order Menu.

The Work Request menu provides six choices:

1. HELP: Describe each menu choice briefly.
2. APPEND: Enter a new service order.
3. UPDATE: Edit an existing service order.
4. INQUIRE: View an existing service order.
5. \*STATUS\*: View or edit the status of a service order.
6. END: Return to the Service Order Management menu.

The Work Request menu gives a HELP option describing each menu choice on-line. APPEND lets you enter a new Work Request through a data entry screen. Press F1 while entering data for help on particular fields. Select UPDATE to change existing Work Request information. Use INQUIRE to view an existing Work Request without changing it. Select STATUS to work with Work Request Status. When you enter a new Work Request, the status automatically becomes CS. The status codes are compatible with IFS-M and are the same as status codes for Service Orders.

WORK REQUESTS =>	HELP	APPEND	UPDATE	INQUIRE	*STATUS*	END
<p>EXPLAIN how this screen works. Press ↵ Enter ...</p>						

**Figure 12. Work Request Menu.**

### **3.3.1 APPEND**

When you select APPEND from Work Request Menu, a Work Request Entry Screen (Figure 13) will appear to add a new Work Request. The fields and descriptions are the same as in IFS-M. For convenience, they are described again in this section.

For help on a particular field, press F1. A brief description of the field and a list of valid entries to choose from are shown. Use the ↑ UP ARROW key and the ↓ DOWN ARROW key to highlight the appropriate entry, and press ↵ ENTER to select it.

**3.3.1.1 Saving the Information.** To save the Work Request, first press Ctrl-W, then press ↵ ENTER. The command line displays all the instructions.

**3.3.1.2 Exiting APPEND.** Press the ESC key to EXIT APPEND. (Note, if you press ESC before saving, you will exit without saving new or changed information.)

**3.3.1.3 Field Names and Descriptions.** Enter the appropriate data in each field as defined below. Some of the data described here need to be defined in the data tables using DATA TABLE in the Work and Service Order Management Menu before adding Work Requests.

The INSTALLATION field contains a locally assigned Installation abbreviation. On the first Work Request that you enter, type the Installation's abbreviation. This value will be extracted and displayed by the system to all subsequent Work Requests that you enter. You may change the value by overtyping the displayed value and pressing ↵ RETURN.

DOCUMENT NUMBER consists of CUST ID, SER NO, FY, and TYPE. Each Work Request has a unique DOCUMENT NUMBER (combination of CUST ID, SER NO, FY, and TYPE), which is the key to identify and access any Work Request.

CUST ID identifies a facility user submitting a request for work.

SER NO is assigned by the system. You may either accept the displayed value by pressing ↵ RETURN, or change the displayed value by overtyping it and then pressing ↵ RETURN.

```

WORK REQUESTS =>      HELP      APPEND      UPDATE      INQUIRE      *STATUS      END
                                           02/20/91
INSTALLATION:  USA CERL

** DOCUMENT NUMBER **
CUST ID  SER NO  FY  TYPE                                SHORT JOB DESC

CUST NAME:                                POC NAME:                                POC PHONE:  -  -
REMARK
                                WORK DESC

APVL ACT CD:                                WORK REQ PRI:                                PROG IND CD:                                SPEC INT CD:
EST START:  /  /                                EST COMPLETE:  /  /                                WKCL CD FUNDED                                UNFUNDED
                                CURRENT WORK STATUS CD:CS                                0                                0
                                                                0                                0
                                                                0                                0

                                Total:

<F1>:  HELP      <CTRL W>  TO FINISH

```

**Figure 13. Work Request Entry Screen.**

FY contains the Fiscal Year. It consists of the last digit of the fiscal year in which the Work Request was submitted.

TYPE will contain one of the following document types for a request for work:

- B — Shop stock
- E — Equipment rental
- J — Routine work request
- M — Preventive maintenance
- P — Special project
- S — Standing operations order.

SHORT JOB DESC contains job description that contains a concise summary statement of the work to be performed on an individual DEH Work Request.

CUST NAME contains a name identifying the organizational activity or individual submitting the request for work.

POC NAME identifies the person responsible for the information about the work request. Enter the name of the responsible person and press ↵ RETURN.

POC PHONE contains a phone number to contact the responsible person.

WORK DESC contains a text explanation of the work to be performed.

APVL ACT CD contains a one-character alphanumeric (approval action) code indicating whether a request for work has been approved or disapproved.

WORK REQ PRI contains a locally defined (work request) priority code.

PROG IND CD (Program Indicator Code) identifies Special Command programs or items of interest. Department of the Army-directed codes and their descriptions are as follows:

- A — Hazardous waste
- B — BMAR
- C — Corrosion control
- D — DMAR
- E — Energy
- F — Fire
- G — Family housing
- H — Health
- I — Environment
- N — NAF (nonappropriated funds)
- O — OSHA
- P — Pollution abatement
- Q — Quality of life
- R — Recreational activities
- S — Safety (Surgeon General)
- T — Security
- U — Historical preservation
- V — Command interest
- W — Morale/welfare/comfort
- X — Engineer other
- Y — Mission performance/readiness
- Z — Troop projects
- 1 — Archaeology
- 2 — Commercial forest
- 6 — Occupant attributable
- 7 — Occupant nonattributable.

Other codes may be defined locally by the DEH.

SPEC INT CD (Special Interest code) contains a locally assigned code to identify work requirements of special interest to the DEH/DEL organizations or higher headquarters. Code assignment will enable retrieval of all Work Requests sharing the same code.

EST START (Estimated Work Start Date) identifies the estimated date (DD-MM-YY) on which the work will start.

EST COMPLETE (Estimated Work Completion Date) identifies the estimated date (DD-MM-YY) on which the work will be completed.

WORK STATUS CD represents the status of the work. CS will be automatically displayed on the Work Request Entry screen. You may either accept the entry by pressing ↵ RETURN or change the entry by overtyping the original value and then pressing ↵ RETURN. WORK STATUS CDs are:

- APV — Approved
- BO — Bids Opened
- CA — Contract Awarded
- CAN — Canceled
- CDE — Completed Detailed Estimating
- CMP — Completed
- CR — Customer remark

- CUE — Completed Unit Price Estimating
- DEF — Deferred
- DIS — Disapproved
- HLD — Held for further action
- REO — Reopened
- SUS — Suspended for further information
- AA — Approval Authority
- ADE — Assigned Detailed Estimating
- AUE — Assigned Unit Price Estimating
- BGD — Building and grounds division
- BUD — Budget and accounting
- CRB — Construction Review Board
- CS — Customer Service
- DE — District Engineer
- DEH — Director, Engineering and Housing
- DEP — Deputy DEH
- DOC — Director of Contracting
- EDB — Engineering Design Branch
- ENV — Environmental Engineering
- EPS — Engineering Plans and Services Division
- ERM — Engineering Resources Management Division
- FD — Fire Department
- FHM — Family Housing Management Office
- HSG — Housing Division
- IC — Installation Commander
- MC — Material Coordinator
- OPS — Operations Division
- SAF — Safety Office
- SCH — Scheduler
- SEC — Security Office
- SHP — Shop
- SUP — Supply Division
- TDE — To Detailed Estimating
- TR — Technical Review
- TUE — To Unit Price Estimating
- UD — Utilities Division.

Other WORK STATUS CDs may be locally defined.

WKCL CD may be one of the following WorkClass Codes identifying the work program:

- J — Operations of utilities
- K — Maintenance and repair
- L — Minor construction and alterations
- M — Other engineering support/in-place equipment.

FUNDED represents the estimated funded cost of the job in dollars.

UNFUNDED represents the estimated unfunded cost of the job in whole dollars.

Enter all appropriate data. You may enter up to three values for WorkClass Code, WorkClass Funded and Unfunded amounts as described above. The system will calculate and display the total amount.

### 3.3.2 UPDATE/INQUIRE

Select UPDATE from the Work Request menu to change any existing Work Request information, or INQUIRE to view an existing Work Request without making changes. The remainder of the processes described below are the same for UPDATE and INQUIRE.

The Work Request Information screen will appear with no information in the fields. It is similar to the Work Request Entry screen with the exception of the command line, which displays **↓ INDEX ACCESS, <Home> 1st RECORD, and <ESC> TO EXIT.**

There are two methods for selecting the Work Request:

1. Type in the document number by pressing **↓ INDEX ACCESS**
2. Search through all Work Requests by pressing **HOME**.

**3.3.2.1 Finding a Work Request Based on Document Number.** To search for a Work Request based on the document number, press **↓ ENTER** for INDEXED ACCESS as shown on the command line. To find the Work Request, type in the document number. WORKMAN then searches for that document number. If it cannot be found, WORKMAN will display "document number not found" in the command line. If it finds the Work Request, WORKMAN displays the Work Request Information.

**3.3.2.2 Searching Through Work Requests.** Press the HOME key to see the first Work Request. Press the PgDn key to see the next Work Request, and the PgUp key for the previous Work Request.

When the Work Request Information is displayed for an INQUIRE operation, the command line shows three options: **<PgUp> PREVIOUS RECORD, <PgDn> NEXT RECORD, <ESC> EXIT.** Press ESC key to return to the Work Request menu.

When the Work Request Information is displayed for an UPDATE operation, the command line shows five options: **↓ TO EDIT, <Del> TO DELETE, <PgUp> PREV, <PgDn> NEXT, <ESC> EXIT.** To edit a particular Work Request press **↓ RETURN**. The cursor will move to the Work Request fields. Press the DEL key to delete the Work Request. The other three options are same as in INQUIRE operation.

### 3.3.3 STATUS

Select **\*STATUS\*** to work with Work Request Status. Status Codes represent the STATUS of the work. When a new Work Request is entered, the STATUS code CS (customer service) is automatically assigned to it by the system. The STATUS Code will need to be changed as the status of the work changes.

**\*STATUS\*** provides three capabilities: APPEND, UPDATE, INQUIRE. Selecting END takes you back to the Work Request menu.

**3.3.3.1 APPEND.** A status record is created with status CS for every Work Request that is created. Every time the status is changed, another status record will be created for that Work Request. Press the Help (F1) key in the Work Status Code field to see a list of valid Work Status Codes. Use **↑ UP** and **↓ DOWN** arrows to scroll through the list and press **↓ ENTER** to select the appropriate code.

When APPEND is selected from STATUS menu, the Work Request Status Information fields are shown on the screen (Figure 14), without information in the fields as in the case of Service Orders. The cursor will be at the Document Number. Enter the Work Request Document Number. The Work Request Status Entry screen will appear.

The Work Request Status Entry screen contains all the information about that Work Request. The cursor will be at the Work Status Date prompt. Enter the date, time, and the new status code. The status description will be displayed by the system. You may also enter a short status comment. Press CTRL W to finish the entry. Follow the instructions on the command line. When the cursor is at WORK STATUS CODE, you may press F1 to see a list of codes and select from them.

**3.3.3.2 UPDATE/INQUIRE.** Select UPDATE from Work Request Status Menu to change Work Request Status information. Select INQUIRE to view the current status and all the status codes with the appropriate dates for that Work Request. If you select INQUIRE, you are not allowed to make any changes to the Work Request Status record. Since there are several status records for each Work Request, UPDATE allows you to edit one status record at a time for a Work Request. The remainder of the processes described below are the same for UPDATE and INQUIRE.

The Work Request Status Information screen will be displayed with no information in the fields. Select the Work Request. There are two methods for selecting the Work Request:

1. Enter the document number
2. Search through the Work Requests Status database.

**3.3.3.2.1 Finding a Work Request Based on Document Number.** To search for a Work Request based on the document number, press ↵ ENTER for INDEXED ACCESS as shown on the command line. To find the Work Request, type in the document number. WORKMAN will search for that document number. If the number is not found, WORKMAN displays "document number not found" on the command line. If it finds the Work Request, WORKMAN displays the Work Request Status Information.

```

W O R K   S T A T U S  =>    HELP    APPEND    UPDATE    INQUIRE    END
                                           04/10/91

INSTALLATION: USA CERL                      RECEPTIONIST: Pam

--- DOCUMENT NUMBER ---
CUST ID SER NO FY TYPE
FH      Q0001  1  B

SHORT WORK DESCRIPTION
Repair interior walls.

                                WORK STATUS
DATE M/D/Y  TIME 24H:M  CODE  STATUS DESCRIPTION  STATUS COMMENT
04/10/91    10:44    CS    CUSTOMER SERVICE
06/10/91    12:00    CA    CONTRACT AWARDED
  /  /      :

<F1>: HELP      <CTRL W>  TO FINISH
  
```

Figure 14. Work Request Status Entry Screen.



**3.3.3.2.2 Searching Through Work Requests Status Database.** Press the HOME key to see the first Work Request. Press the PgDn key to see the next Work Request status record, and the PgUp key for the previous Work Request Status record.

When the Work Request Status Information is displayed for the INQUIRE operation, the command line shows three options: <PgUp> PREVIOUS RECORD, <PgDn> NEXT RECORD, and <ESC> EXIT. Press ESC key to go back to the Work Request Status Entry screen.

When the Work Request Status Information is displayed for UPDATE operation, the command line shows five options: ↵ TO EDIT, <Del> TO DELETE, <PgUp> PREV, <PgDn> NEXT, and <ESC> EXIT. To edit a particular Work Request, press ↵ RETURN. The cursor will move to the Work Request Status fields. Press the DEL key to delete the Work Request Status record. The other three options are the same as in INQUIRE operation.

### 3.4 Customer Evaluations/Complaints

Select EVAL/COMPL from the Work and Service Order Management menu to enter customer evaluations and customer complaints.

The EVAL/COMPL menu (Figure 15) provides three capabilities: Customer Evaluations, Service Order Complaints, Work Request Complaints. To return to the Work and Service Order Management menu, highlight END and press ↵ RETURN.

The screenshot shows a terminal window with a menu structure. At the top, a horizontal bar contains the following options: SERVICE, WORK, EVAL/COMPL, DATA TABLE, ANALYSIS, and END. Below this bar, a sub-menu is displayed with the following options: CUSTOMER EVALUATIONS, SERVICE ORDER COMPLAINTS, WORK REQUEST COMPLAINTS, and END. At the bottom of the screen, there are instructions for navigation: '↑ ↓ → ← TO MOVE' and '↵ TO SELECT'. To the right of these instructions, the text '<END> RETURN' is displayed. Below the navigation instructions, the text 'CUSTOMER EVALUATION FORMS' is visible.

**Figure 15. Evaluations/Complaints Menu.**

### 3.4.1 CUSTOMER EVALUATIONS

The Customer Evaluation option works only with Service Orders. The system uses random sampling techniques to generate customer evaluation forms for certain customers. All available information about the Service Order is filled in and displayed by the system. These forms are printed and sent out for customer evaluation. After customers return the forms with their ratings, use this option to retrieve the forms in the system and to add the evaluation ratings (Figure 16). Type in the document number, or search through all evaluation forms to find the evaluation form you wish to edit.

Press CTRL-W to save the form with changes. Follow the instructions on the command line. In case of errors, press ESC to go back to the previous menu, and start over. The evaluation ratings on these forms are used in the ANALYSIS module, which will be discussed later.

### 3.4.2 CUSTOMER COMPLAINTS

If there is a call from a customer with a complaint about a Service Order, select Service Order Complaints from the EVAL/COMPL menu. If the complaint is about a Work Request, select Work Request Complaints from the EVAL\COMPL menu. The Customer Complaint Form will be displayed to enter the complaint. The remainder of the processes described below are the same for Service Order and Work Request.

```
C U S T O M E R   E V A L U A T I O N  =>   EDIT   END

*** DEH CUSTOMER EVALUATION FORM ***
                                INSTALLATION: USA CERL
POC NAME:   MR. LEE              POC PHONE: 217-548-5767
                                WORK LOCATION: 100 GREEN ST., URBANA
--- DOCUMENT NUMBER ---          BRIEF WORK DESCRIPTION
CUST ID SER NO  FY TYPE
FE          Q0001  0  R

SHOP CD:   CAR                  CONTRACTOR:   CONTRACT NO. 4
DATE SO/WO ISSUED:   09/07/90
DATE SO/WO COMPLETED: 09/07/90

Please rate 1 to 5 in the corresponding boxes regarding the questions asked:

1 - EXCELLENT      2 - GOOD      3 - SATISFACTORY      4 - POOR      5 - FAILED

Responsiveness .....3                      Attitude .....2
Punctuality.....5                      On Schedule .....1
Quality of workmanship....2

THANK YOU FOR YOUR ATTENTION !

<F1>: HELP          <CTRL W>   TO FINISH
```

Figure 16. Customer Evaluation Form.

Four options are displayed on the screen:

1. APPEND: To enter a complaint
2. UPDATE: To correct errors
3. PRINT: To print the complaint form
4. END: To return to the EVAL/COMP menu.

When APPEND is selected, the Customer Complaint Entry Form will be displayed (Figure 17). Enter the document number to retrieve the Service Order/Work Request information.

When you enter the document number of the Service Order/Work Request that the customer is complaining about, the system brings in the information about that Service Order/Work Request. Enter the complaint and press CTRL-W to finish the entry. Follow the instructions on the command line.

Select the UPDATE option to correct erroneous information entered into a Complaint Form. Enter the Document Number of the Complaint Form and press ↵ RETURN to confirm the EDIT mode. Use the TAB key to move to the desired field and change the information. Press CTRL-W to store the information. Press ESC to return to the EVAL/COMPL menu without changing any information. The command line at the bottom of the screen will show you all the options and commands (keys).

NOTE: Complaint is already entered using Append mode. Any errors in that complaint are corrected using Update mode.

To print the Customer Complaint Form on a local printer use the PRINT option after entering the complaint. WORKMAN will prompt for the document number. Enter the document number of the complaint, and the Customer Complaint Form will be printed.

```

*** DEH CUSTOMER COMPLAINT FORM ***
RECEPTIONIST:      MARY
DATE OF COMPLAINT: 11/11/91

POC NAME:          CERL                      TELEPHONE NUMBER: 217-356-5211
ADDRESS/ORGANIZATION: Bldg 1501

--- DOCUMENT NUMBER ---
CUST ID SER NO  FY TYPE          BRIEF DESCRIPTION OF SO/WR
001      Q0009   0   R           Repair back door

                                NATURE OF COMPLAINT
The repair work is not satisfactory. The door lock is not working.

PRIORITY:
DATE SO/WR ISSUED: 09/10/90      TIME SO/WR ISSUED: 08:19
DATE COMPLETED:   09/10/90      TIME COMPLETED: 08:19
                                LABOR HOURS      0.0
                                (Eg: 0.25)

<F1>: HELP      <CTRL W>  TO FINISH
```

Figure 17. Customer Complaint Entry Screen.

### 3.5 Data Tables

The Data Table menu (Figure 18) allows you to create and maintain several data tables with Service Orders and Work Requests. The data is compatible with IFS-M data. You may set a password protection to these data tables. The system comes with password "CERL." When first using the system, enter "CERL" as the password prompt. Select "0" (zero) to set your own password.

The data for Service Orders is in Data Tables for Service Orders, and the data for Work Requests is in Data Tables for Work Requests. Any data that can be used by both Service Orders and Work Requests is in Common Data Tables. Real Property Data Tables contain facility data. Select the appropriate number from the menu. If you are using IFS-M, you may have most of this data set up in IFS-M. If you are using WORKMAN as a standalone system, you will be maintaining the data in this menu mode.

The WORKMAN system will let you add, change, or view any data from these data tables. Thus it is critical that only authorized personnel use this mode to work with this data. Set up your own password and change it frequently to protect the data in these tables.

The DATA TABLE menu also lets you print a hard copy of the data. When you select any of the data tables from the DATA TABLE menu, WORKMAN displays a horizontal bar with HARD COPY and ON-LINE (Figure 19). Select HARD COPY to get a listing of the table, and ON-LINE to maintain the tables.

The data tables for Service Orders include:

- CUSTOMER LIST
- DOCUMENT TYPES
- EQUIPMENT
- SHOP CODE
- TASK CODE

```
SERVICE  WORK  EVAL/COMPL  DATA TABLE  ANALYSIS  END

0. CHANGE PASSWORD
1. DATA TABLES FOR SERVICE ORDER
2. DATA TABLES FOR WORK REQUEST
3. COMMON DATA TABLES
4. REAL PROPERTY DATA
5. END

↑ ↓ → ← TO MOVE          ↵ TO SELECT          <END> RETURN
```

Figure 18. Data Table Menu.

- PRIORITY LEVEL
- COMPONENT CODE
- HOUSING CLASS CODE.

The data tables for Work Requests include:

- CUSTOMER LIST
- DOCUMENT TYPES
- PRIORITY LEVELS.

Common data tables are:

- WORK CLASS CODE
- PROGRAM INDICATOR CODE
- SPECIAL INTEREST CODE
- WORK STATUS CODE.

Real Property data includes:

- FACILITIES
- PARTITIONS
- DESIGN CATEGORY CODE
- FAMILY HOUSING QUARTER NUMBER.

Highlight the data you like to work with and press ↵ RETURN. HARDCOPY and ON-LINE will appear on the screen. Select HARDCOPY to print the data in the tables. Select ON-LINE to maintain the data tables. Another menu with data tables list will appear. Select the data table to work with. A submenu window with APPEND, UPDATE, INQUIRE, and END will appear. A submenu window with APPEND, UPDATE, INQUIRE, and END will appear.

SERVICE	WORK	EVAL/COMPL	DATA TABLE	ANALYSIS	END
---------	------	------------	------------	----------	-----

HARDCOPY	ON-LINE
----------	---------

SERVICE ORDER
1. <b>CUSTOMER LIST</b> 2. DOCUMENT TYPES 3. EQUIPMENTS

C U S T O M E R =>	APPEND	UPDATE	<b>INQUIRE</b>	END
Customer ID: FE	Reimbursed ? Y/N:		Y	
Customer Name:	FAMILY HOUSING			

<PgUp> PREVIOUS RECORD
<PgDn> NEXT RECORD
<ESC> EXIT

**Figure 19. Data Tables Maintenance.**

In Figure 19 the selected options are shown in boldface. The user selected the Data Tables for Service Order from the Data Table menu. The ON-LINE option is chosen to maintain a SERVICE ORDER Data Table. CUSTOMER LIST is selected from the list of SERVICE ORDER Data Tables. A window with APPEND, UPDATE, INQUIRE, and END options is displayed for Customer List data. INQUIRE is selected to view data. Select UPDATE to edit the data. You can use PgUp and PgDn keys as indicated on the command line to go to other records. Select APPEND to add data to the data table. The processes of Saving data and Exiting without saving are similar to the processes in Work Request, Service Order, and Status records. All instructions are displayed on the command line.

Refer to the Field Names and Descriptions for Service Order and Work Request data. Enter the appropriate data into the data tables. The data should be entered into the data tables before using Service Order, Work Request, and Analysis menus from Work and Service Order Management menu.

### 3.6 ANALYSIS

ANALYSIS is the most important part of the work and service order management section of this system. This menu item is the mode you use to get reports, graphs, etc. for analysis and management.

Select ANALYSIS. The options are REPORTS and QUERY. Select REPORTS to get canned reports and graphs. These are the reports formatted by the system. Since the data that goes into these reports is known to the system, you can also send it to FOXGRAPH to make graphs. The system takes care of all the interface problems. Use QUERY to get custom reports for those situations where canned reports are not appropriate. When you select REPORTS, the Analysis menu (Figure 20) will appear.

The figure shows a menu interface within a rectangular frame. At the top is a title bar with the text: SERVICE WORK EVAL/COMPL DATA TABLE ANALYSIS END. Below this is a main menu box containing the text: REPORTS, QUERY, and END. Below the main menu box is a sub-menu box containing the text: DEH SO SUMMARY REPORT, DEH WR SUMMARY REPORT, QUALITY ASSURANCE, and END. At the bottom of the frame is a command line with the text: ↑ ↓ → ← TO MOVE, ↵ TO SELECT, and <END> RETURN. Below the command line is the text: SUMMARY REPORT BY WEEK/MONTH/RANGE.

Figure 20. Analysis Menu.

The options are:

1. DEH SO SUMMARY REPORT
2. DEH WR SUMMARY REPORT
3. QUALITY ASSURANCE
4. END.

Select DEH SO SUMMARY REPORT to get system-generated and formatted reports, and graphs for Service Orders. DEH WR SUMMARY REPORTS will produce the similar reports and graphs for Work Requests. Select QUALITY ASSURANCE to generate evaluation forms using random sampling techniques, and to get evaluation and customer complaint reports for quality assurance.

### 3.6.1 Service Order Analysis

Select DEH SO SUMMARY REPORT to analyze Service Order data. The DEH SO SUMMARY REPORT selection will take you to DEH SO SUMMARY REPORTS window (Figure 21). The options in this menu are:

1. For Selected Customers
2. For All Customers
3. Shops by Queue
4. Top Ten Facilities
5. By Housing Class Code
6. By Shops.

Select the reports you want to generate. You have an option to select either report or graph. Reports can be weekly, monthly, or quarterly, or you may also select other time periods by choosing RANGE, which will let you enter starting and ending dates for the report. In Figure 21, TOTAL SOs option is selected from DEH SO SUMMARY REPORTS window. After selecting the type of the report, another window with WEEKLY, MONTHLY, QUARTERLY, BY RANGE, and END will appear. Select the appropriate item in that window. QUARTERLY is selected in Figure 21. Quarter Number and Fiscal Year are entered by the user for the QUARTERLY selection.

The screenshot shows a window titled "SO SUMMARY REPORTS". Inside, there is a list of options: "TOTAL SOs", "FOR SELECTED CUSTOMER", "FOR ALL CUSTOMERS", "SHOPS BY QUEUE", "TOP TEN FACILITIES", "BY HOUSING CLASS CODE", "BY SHOPS", and "END". A box on the right contains the report frequency options: "WEEKLY", "MONTHLY", "QUARTERLY" (which is bolded), "BY RANGE", and "END". At the bottom, a box contains the text: "\*\*\* DEH SO QUARTERLY REPORT \*\*\*" and "ENTER THE DESIRED QUARTER(#Q/FY): 04/90".

```
SO SUMMARY REPORTS
TOTAL SOs
FOR SELECTED CUSTOMER
FOR ALL CUSTOMERS
SHOPS BY QUEUE
TOP TEN FACILITIES
BY HOUSING CLASS CODE
BY SHOPS
END
WEEKLY
MONTHLY
QUARTERLY
BY RANGE
END
*** DEH SO QUARTERLY REPORT ***
ENTER THE DESIRED QUARTER(#Q/FY): 04/90
```

Figure 21. Analysis of Service Orders.

You will get similar prompts for other choices. Notice that Quarter 4 is entered as 04. Similarly, for monthly reports enter 01 for January, 06 for June, etc. Any single number for a prompt to select the period should be entered with a '0'.

WORKMAN will request a destination for the report with the message: "DISPLAY ON [S]CREEN OR [P]RINTER OR [G]RAPHICS ? S/P/G" on the bottom of the screen. Enter S to display the report on the screen, P to print the report, and G for graph. The report selection will give you a report similar to the one shown in Figure 22, a Quarterly report for Total Service Orders selection. Other report types are listed in the DEH SO SUMMARY REPORTS window in Figure 21. Figure 23 shows the Service Order Report of Top Ten Facilities.

The Service Order Report of Top 10 Facilities lists the 10 facilities with the highest number of Service Orders for the selected period. This report also lists Facility Numbers, the number of Service Orders received, the number of Service Orders completed, and the Service Orders to be done.

Figure 24 displays Total Service Orders as a bar graph. The X-axis shows Service Order Priorities, and the Y-axis the number of Service Orders. Service Orders completed, received, and to be done are shown as separate bars. A color monitor will display the graphs in several colors. You may print the graph on a local printer. (Graphs are available for most of the canned reports.)

### 3.6.2 Work Requests Analysis

Select DEH WR SUMMARY REPORT to analyze Work Request data. The DEH WR SUMMARY REPORT selection from the Analysis menu will open the DEH WR SUMMARY REPORTS window. The options in this menu are:

1. TOTAL WRs BY PRIORITY
2. TOTAL WRs BY CUSTOMERS
3. TOTAL WRs BY ACTION CODE

* QUARTERLY TOTAL SOs PERFORMANCE REPORT *				
07/01/90 TO 09/30/90				
	PRI-1	PRI-2	PRI-3	TOTAL
SOs RECEIVED:	25	33	21	79
SOs COMPLETED:	23	21	10	54
SOs IN QUEUE:	2	12	11	25
AVE. DAYS TO COMPLETE:	1.0	3.0	6.0	
AVE. LABOR HRS TO COMPLETE:	1.0	2.0	4.0	
----- END OF REPORT -----				

**Figure 22. Quarterly Service Order Report.**



* SERVICE ORDER REPORT OF TOP 10 FACILITIES *			
01/01/90 TO 01/01/91			
FAC NO	SOs RECEIVED	SOs COMPLETED	SOs IN QUEUE
10000	13	11	2
10001	8	5	3
11000	8	6	2
13000	7	6	1
11001	7	5	2
13004	6	5	1
12000	6	5	1
12020	6	6	0
12500	5	4	1
12050	5	5	0

Figure 23. Service Order Report of Top 10 Facilities.

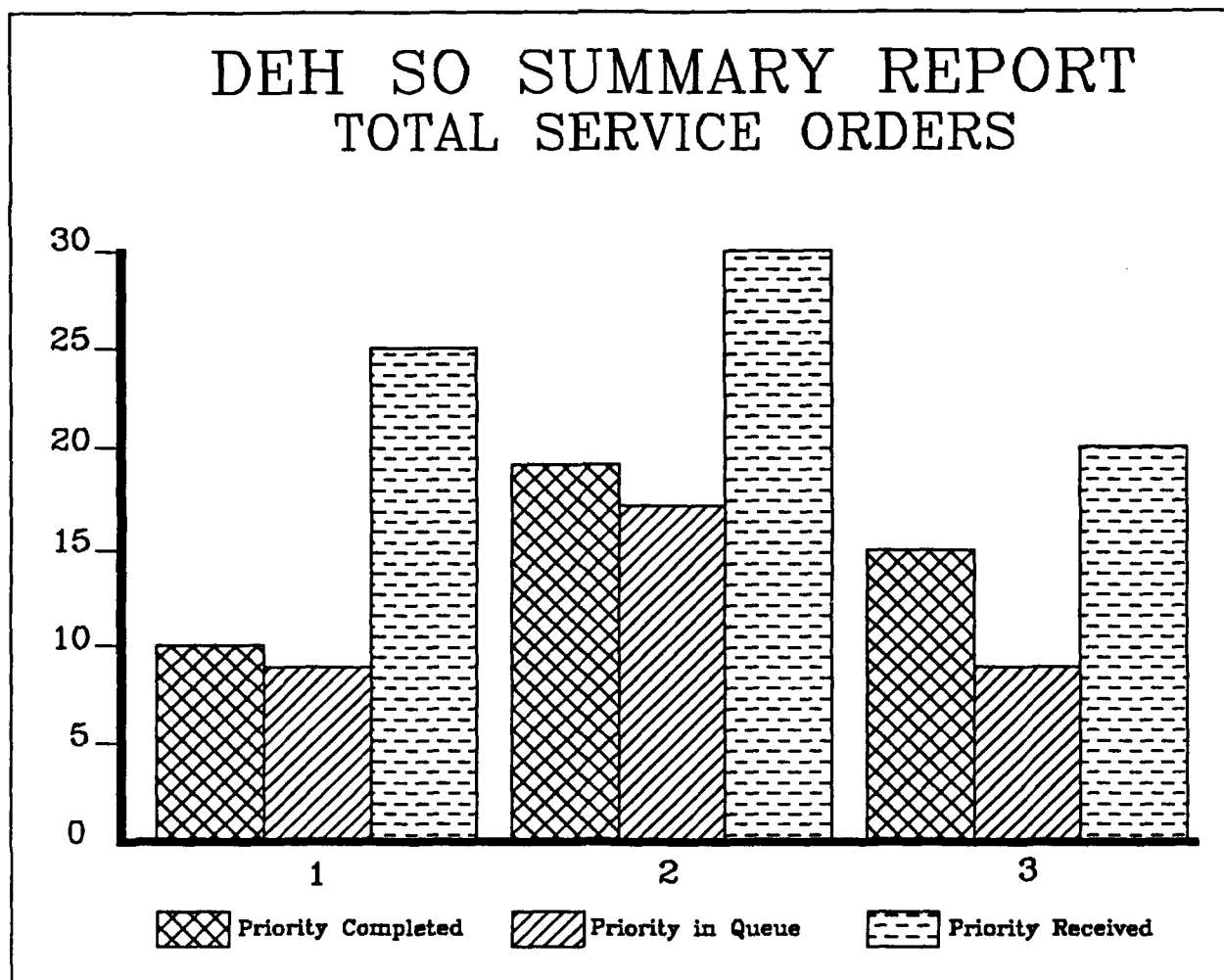


Figure 24. Bar Chart of Service Orders.

4. STATUS OF WORK REQUESTS
5. APPROVAL OF WORK REQUESTS
6. WORK REQUESTS IN QUEUE.

Select the reports you want to generate. You may select either report or graph as in the case of Service Orders. The processes of Work Request Analysis are similar to the processes of Service Order Analysis.

Figure 25 shows a sample Work Requests Status Report. A list of the jobs and their current status are provided in this report. All other report types are listed in the DEH WR SUMMARY REPORTS window.

You may view any of these report types on the screen, or print or graph the selected data.

### *3.6.3 Quality Assurance*

Select Quality Assurance from the Analysis menu to use customer complaints or evaluation forms for analysis and reports. You will also select Quality Assurance to generate Evaluation Forms. This selection opens the Quality Assurance window.

The options in this menu are:

1. CUSTOMER COMPLAINTS LIST
2. RATING FROM CUSTOMER EVALUATION
3. GENERATE EVALUATION FORMS.

The CUSTOMER COMPLAINTS report can also be generated for any selected period. This report can be useful to evaluate the work of the contractor, or different shops. It can show number of complaints by shop code, or by priority.

RATING FROM CUSTOMER EVALUATION shows the customers ratings for the Service Orders completed during the selected period. The Evaluation Forms generated by the system are used by customers to rank the five items presented on the form. These rankings are entered into the computer by editing the evaluation forms in the EVAL/COMPL menu. From this menu, a report can be generated on how the customers evaluated the work performed.

Evaluation Forms can be generated by the system using random sampling methods with the GENERATE EVALUATION FORMS option. Again, they can be generated for a selected period. You also have an option to select the percentage of Service Orders you would like to use to generate the evaluation forms.

### *3.6.4 Query*

Select QUERY from the Analysis menu to get custom reports. You may select Service Order custom reports, or Work Request custom reports. The Service Order Query screen is shown in Figure 26. QUERY allows you to select and view the desired records under a specific condition. The four major components of QUERY are:

1. Condition relationship
2. Search method
3. Search standard's value
4. Fields to be searched.

02/20/91  
SERVICE ORDER QUERY  
Enter At Least One Condition

CONDITION RELATIONSHIP:	SEARCH BY :[E/P/R]	VALUE Range From Partial Match Exact Match	Range To
A. CUSTOMER ID:			
B. FISCAL YEAR:			
C. TASK CODE:			
D. SERVICE ORDER PRIORITY:			
E. WORK DESCRIPTION:			
F. FACILITY NO:			
G. SHOP CODE:			
H. WORKCLASS CODE:			
I. SPECIAL INTEREST CODE:			
J. WORK STATUS CODE:			
K. CREATION DATE:			

Condition Relation: <A>nd or <O>r  
Search Method: <E>xact match, <P>artial, <R>ange

<Esc> to exit input, <PgUp><PgDn> to change page  
Up/Dn Arrow keys to scroll records  
Input <A> for And, <O> for or, <X> or <E> for Exit

Figure 25. Service Order Query.

\* WORK REQUESTS STATUS REPORT \*

01/01/90 TO 01/01/91

---DOCUMENT NO---	STATUS	DATE	PRIORITY	WORK DESCRIPTION
FH Q0001 1 R	CA	06/10/90	U	Repair interior walls
FH Q0002 1 R	BID	02/22/91	R	PAINT EXTERIOR
FH Q0003 1 R	CA	01/03/91	R	REPAIR PAVEMENTS
FH Q0017 1 R	CMP	04/01/91	R	LANDSCAPE
----- END OF REPORT -----				

Figure 26. Work Requests Status Report.

QUERY is applied to service order and work request data only. The output of the QUERY will be displayed on screen in a window. You can use the ← RIGHT ARROW and → LEFT ARROW keys to view different fields, and the ↑ UP ARROW and ↓ DOWN ARROW keys to view different records.

3.6.4.1 Condition Relationship. You will see **CONDITION RELATIONSHIP:** on the QUERY screen. In the highlighted box, you can type A or ↵ RETURN for AND condition, O for OR condition, X or E for exit to leave the screen and return to the Analysis menu. For example, if the user-selected field A, field B, and field K as the testing standard, and chose AND as the condition relationship/operator, only data that meets the following criteria will be retrieved:

"if field A and field B and field K are true."

If you selected field A, field B, and field K as the testing standard, and chose OR as the condition relationship/operator, then only records that meet one of the following conditions will be retrieved:

"if field A is true or field B is true or field K is true."

3.6.4.2 Search Method. There are three options available:

- E – for exact match
- P – for partial match
- R – for search by range.

3.6.4.2.1 Search by Exact Match. The searched field value must be identical with the search standard value.

3.6.4.2.2 Search by Partial Match. The searched field value contains the search standard value.

3.6.4.2.3 Search by Range. The searched field value is within the search standard range (either numbers or characters). For example, if you input "2" for field D (service order priority) under column Range-From, and "3" for field D (service order priority) under column Range-To, then all the records whose service order priority is either 2 or 3 will be retrieved for further comparisons.

3.6.4.3 Search Standard's Value. The Search-standard's value is each value (numbers or character strings) input in column VALUE (range from and range to). A search-standard value will be used to compare with the value of the associated/same field in each record to see whether the compared field matches the required condition or not.

For example, if you input "2" in column VALUE Range From and row SERVICE ORDER PRIORITY, and "3" in column VALUE Range To and row SERVICE ORDER PRIORITY, and the search method is by Range, a record's service order priority field containing either "2" or "3" will meet the requirement after comparison.

3.6.4.4 Fields To Be Searched. The field-to-be-searched is the field of each record in a database to be compared with the search-standard value. You will see those searched fields labeled with A., B., . . . K. under **CONDITION RELATIONSHIP.**

For example, if you input "2" in column VALUE Range From and row SERVICE ORDER PRIORITY, and "3" in column VALUE Range To and row SERVICE ORDER PRIORITY, and the search method is by Range, a record's service order priority field containing "2" or "3" will meet the requirement after comparison.

## **4 FILE MANAGEMENT**

Select File Management from Main Menu to maintain Service Order, Work Request, and other databases.

### **4.1 Split SO**

Split SO is used to split the service order database into two parts: current information and historical information. If you want to remove last year's data and store it as a historical file, it can be done with this option. The file will be in the directory /HIST\_SO, with the name SO900112. SO in the filename stands for Service Order data. 900112 in the filename stands for the year (90), starting month (01), and ending month (12). After the split operations, only records from 1 January 1991 are left in the current system.

### **4.2 Split WR**

Split WR is used to split the work request database into two parts: current information and historical information. As in service order data, the historical work request data can be split and saved into a separate file in the \HIST\_WR directory. The file name is similar to the service order file name, except that it begins with WR rather than SO. To remove last year's work request data from the current system, the historical file name will be WR900112.

### **4.3 Merge SO**

Merge SO is used to merge one historical database (file) into the current SO database. Once that historical file is merged into the current system, the file will be removed from the historical file folder (\HIST\_SO). For example, if the current system contains records from 1 January 1991 and the historical file to be merged contains data from 1 January 1989 to 1 December 1989 after merging the current SO, the file will include the historical data as well as data from 1 January 1991.

### **4.4 Merge WR**

Merge WR is used to merge one historical database (file) into the current WR database. Once that historical file is merged into the current system, the file will be removed from the historical file folder (\HIST\_WR).

### **4.5 Reindex**

This selection re-indexes the desired database to make operations (adding records, deleting records, searching records) more efficient.

#### **4.6 Pack DataBase**

During the deletion operation, the deleted records are just marked with a symbol representing temporary deletion. Those records are still in the database file, but not in the index file. Once PACK DATABASE is chosen, the marked records will be removed from the database file.

#### **4.7 New Index**

This selection is used to create a new index file associated with a database file when the original index file is incorrect. The associated database file is not damaged when its index file is re-created.

## DISTRIBUTION

### Chief of Engineers

ATTN: CEHEC-IM-LH (2)  
ATTN: CEHEC-IM-LP (2)  
ATTN: CERD-L

### CEHSC

ATTN: CEHSC-ZC 22060  
ATTN: CEHSC-FM-M 22060  
ATTN: CEHSC-TT-F 22060  
ATTN: DET III 79906

### US Army Europe

V Corps  
ATTN: DEH (11)  
VII Corps  
ATTN: DEH (15)  
21st Support Command  
ATTN: DEH (12)  
USA Berlin  
ATTN: DEH (9)

### 8th USA, Korea

ATTN: DEH (19)

### Fort Leonard Wood, MO 65473

ATTN: ATZA-TE-SW  
ATTN: Canadian Liaison Officer  
ATTN: German Liaison Staff  
ATTN: British Liaison Officer (2)  
ATTN: French Liaison Officer

### USA Japan (USARJ)

ATTN: DEH-Okinawa 96331

### Area Engineer, AEDC-Area Office

Arnold Air Force Station, TN 37389

### 416th Engineer Command 60623

ATTN: Facilities Engineer

### US Military Academy 10996

ATTN: Facilities Engineer

### AMC - Dir., Inst., & Svcs.

ATTN: DEH (23)

### FORSCOM (28)

FORSCOM Engr, ATTN: Spt Det. 15071  
ATTN: Facilities Engineer

### HSC

Walter Reed AMC 20307  
ATTN: Facilities Engineer  
Fitzsimons AMC 80045  
ATTN: HSHG-DEH

### Military Dist of Washington

ATTN: DEH  
Fort Lesley J. McNair 20319  
Fort Myer 22211  
Cameron Station (3) 22314

### TRADOC (19)

HQ, TRADOC, ATTN: ATEN-DEH 23651  
ATTN: DEH

### USAIS

Fort Ritchie 21719  
Fort Huachuca 85613  
ATTN: Facilities Engineer (3)

### WESTCOM

Fort Shafter 96858  
ATTN: DEH  
ATTN: APEN-A

### Fort Belvoir, VA

ATTN: CECC-R 22060

### HQ, XVIII Airborne Corps and

Ft. Bragg 28307  
ATTN: AFZA-DEH-EE

### NAVFAC

ATTN: Facilities Engr Cmd (9)

### American Public Works Association 60637

### Defense Technical Info. Center 22304

ATTN: DTIC-FAB (2)

182  
09/91